Zero Retries

Journal of The Northwest Amateur Packet Radio Association

Steve Stroh, N8GNJ, Editor — December 1989 Volume 6 Number 3

NAPRA MEETINGS:

NAPRA General Meetings are on the second Saturday of each month, beginning at 1:00 P.M. We attempt to keep the business portions of the General Meeting very short and allow plenty of time for presentations and technical chat. Beginners are welcome and can usually find an answer to their questions at a NAPRA General Meeting.

On odd numbered months, NAPRA meetings are held at the Radio Club of Tacoma, 1249 Washington Street, Tacoma, WA. From I-5 South, go West on Highway 16 (Union Avenue). Left on South 15th Street, Right on Washington Street, and look for tower w/beam. Talk in on 145.33-.

On even numbered months, NAPRA meetings are held at the Boeing Employees Amateur Radio Society Club House, Renton Municipal Airport, Renton WA. From I-405S, take exit 2B (167N, Ranier Ave S.), turn right on Airport way, turn left into Renton Municipal Airport. The BEARS clubhouse is directly beneath the OLD control tower. Talk in on 145.33-.

NAPRA Board of Directors Meetings are held on the Third Wednesday of each month beginning at 7:00 P.M. at the Omni Restaurant (in their meeting room), 4701 S 188th Street, in Seattle. The Omni is located just West of I-5- take the 188th Street exit.

The general public is welcome to attend these or any other NAPRA meeting.

NAPRA VOICE NET

NAPRA sponsors a Packet Radio Ragchew every Thursday night from 9:00 to 10:00 P.M. on the Evergreen Intertie Voice Repeater Network. In the Puget Sound area, the frequency is 145.33 (-600 KHz input). Any questions, comments, or news are welcome. Newcomers to packet are especially encouraged to check in.

NAPRA ELECTIONS

Steve Stroh N8GNJ
Secretary, NAPRA

At the October, 1989 General meeting, 7 individuals were elected to serve on the NAPRA Board of Directors. Per the recent constitution change, those seven were elected to "a" position- an individual was not elected to a specific position. At the October Board of Directors meeting, those seven shuffled themselves into the following positions (with their home BBS' and phone numbers):

President	Don Werts N7NKJ @KD7NM 246-1672
Executive Vice President	John MacDuff KA7TTY @WS7M 392-7623
Technical Vice President	Bob Donnell KD7NM @KD7NM 827-8005
Secretary	Steve Stroh N8GNJ @KD7NM 481-5735
Treasurer	Peter Dahl WA7FUS @KD7NM 778-3581
Director At Large	Dennis Goodwin KB7DZ @KD7NM 871-5818
Director At Large	Larry Babcock WB7USL 655-5898

Bob KD7NM has agreed to set up a distribution routing so that messages to NAPRA or BOD @ KD7NM will be distributed to each board member at his home BBS. Hope to hear from you soon!

RANDOM BITS

Don Werts N7NKJ
President, NAPRA

Well, this is a new experience for me, writing something for Zero Retries from the President's point of view. Something that is near and dear to my heart, now that I'm President, is club dues. Just like the Holiday season must come once a year, so do the dues.

Some of you probably wonder, "where does the money go"? Let me take a few lines here and see if I can be of help.

First, NAPRA maintains two nodes, SEA and SEAW, probably the busiest in the state.

Second, NAPRA also attempts to help other Node owners with either equipment or monies, to support the Backbone (Trunk) frequency.

Third, NAPRA ventured into new territory (for NAPRA) by taking on a project to build and install a Full Duplex Digital Regeneration Network Node Controller (NNC) to replace the current SEA user equipment.

Fourth, NAPRA has attempted to keep you informed via copies of the Zero Retries newsletter. We've been a little lax about the newsletter this last year, and this will improve. Just as a side line, it costs approximately $600.00 a year with postage and printing to send you six copies of the newsletter. That is a substantial portion of the income from you as members! Doesn't leave very many dollars to fund the above projects. I need to make something very clear on this subject. NAPRA's charter is not to be a newsletter publisher. The newsletter is one way we try to keep you up to date. Someday, because of the costs of publishing and mailing it out, it may be circulated on packet only. I'd really like to hear your opinion on that topic, via packet please. I receive mail at the KD7NM BBS.

OK, next topic, Where are we going? Well, according to several messages I've received, we are having trouble getting around on the network, eg, the Backbone/Trunk. NAPRA has been loaned the use of a 440 MHz full duplex repeater, complete with cavities and circulator. One member is designing and building antennas for it. This repeater will be installed at the SEA site and remove some of the traffic load off of the current 220 MHz backbone/trunk. This system is the start of a second backbone/trunk to handle your packet activity. Node owners interested in more information about the 440 MHz backbone/trunk should contact NAPRA Technical Vice-President Bob Donnell KD7NM @ KD7NM.

Installing another backbone is an expensive item, and we haven't even gone beyond the current 1200 BPS rate. NAPRA is actively reviewing equipment and some members are chompin' at the bit, excuse the pun, to go up to 9600 BPS for the backbone/trunk. When the network steps up to 9600 BPS, this will also be a step up for the dollars/node costs. NAPRA is also studying sites, propagation and equipment suitable for the 900 and 1200 MHz bands for high speed trunking.

Let me attempt to explain why NAPRA ventured out to build one of the few Full Duplex digital regeneration NNC's around. The SEA Node has the highest number of the "hidden transmitter" problem we could identify in the State, plus, all of the low level direct connects!
The full duplex NNC will essentially eliminate the "hidden transmitter" problem and your communications/connects to the hilltop/node will not be hampered by those who want to do direct connects to their friends. Throughput improvement will not go unnoticed!

Several NAPRA members in the Puget Sound area have been using a software package which runs on the IBM PC's, or clones, which allows us to gather AX.25 packet information from the network. This has given us some very valuable insight into the network operation. Anyone interested in doing the same, leave me a message on the KD7NM BBS. The software runs unattended.

NAPRA has several major tasks to accomplish this coming year. Should be exciting! The first task is to start putting into place the next generation or phase of the Backbone/Trunking system. Second, we need to be able to finance this new hardware by increasing our membership and fund raising. Last, we have taken the responsibility for packet frequency coordination for the Western Washington area. Already, we have the packet frequency policy written up and in final stages of approval, and, the network is beginning to come into focus. Those tasks coming into fruition allows us to concentrate on membership/funding emphasis. I think that this may be, as is for most volunteer groups, one of the tougher tasks to handle. But, with your help and support, we can achieve the funding that is needed to build a network which we all can enjoy.

Enclosed in this issue is a questionnaire about NAPRA. Please fill it out and bring it to the next meeting or mail it to the NAPRA address on the cover. We don't get much feedback from our membership, and we REALLY want to know what you think!

STEVE HAZELETT N7HFZ PRESENTED WITH NAPRA APPRECIATION AWARD

Steve Stroh N8GNJ
Secretary, NAPRA

At the October 1989 Northwest Amateur Packet Radio Association Board of Director's meeting, it was decided to present an award to Steve Hazelett [then] NAPRA Technical Vice-President for his ongoing contributions to Packet Radio in the Northwest and operation of a VERY busy hub Packet Radio Bulletin Board System.

The award reads:

Thank You!

Steve Hazelett N7HFZ

The many hours that you have donated to NAPRA and to Packet Radio in the Puget Sound area are very much appreciated.

Presented by the 1989-1990 NAPRA Board of Directors

This information was withheld from the publicly distributed NAPRA October Board of Director's meeting minutes until the award could be made and presented to Steve.

The NAPRA Board of Directors periodically make such awards in an attempt to recognize some of the tremendous contributions that individuals make toward advancing Packet Radio in the Northwest. Awards can also be made jointly, for those involved in a team effort. There is no fixed criteria (such as technical contributions) for awards and awards are presented on an as-appropriate basis, with no set time schedule. Those receiving awards do NOT have to be a member of NAPRA- awards are for an individual's contribution to Packet Radio.

The first such award was to made to Don Werts N7NKJ in August 1989 (presented at the Tacoma Hamfair) for his ongoing contributions to Packet Radio in the Northwest and for being the prime builder of a Full Duplex digital regeneration package for the 145.01:SEA LAN and several other technical projects.

If you would like to nominate an individual for such an award, please contact NAPRA President Don Werts N7NKJ, at 206/246-1672. A phone call is preferred so as not to alert the nominee (packet traffic is by no means private).

[Originally appeared as a Northwest General Bulletin- Ed.]

PACLEN Parameter Explained

Scott Cronk N7FSP

The PACLEN parameter is [an often misunderstood] parameter. It stands for: PACket LENgth, thus PACLEN. It does NOT insert characters into your text, message, or bulletin. If it did, you would see mis-spelled characters - more than most of us HAMs already do.

OK, [so] what's the big deal? The point is just this: The PACLEN parameter has absolutely nothing to do with the Carriage or Return key. It will not add a Carriage or Return into your text, nor will it add anything else to your text. Its only function is to determine how many characters can be sent in a full packet - not when a Carriage return will be sent - you need to do that!

Most packet systems that you'll be encountering; other users, mailboxes/BBS's and other resources operate with 80 columns for viewing the text that you will be sending. If you do not send the data correctly others will view your text with double spaced lines, fractured words as they line wrap across the screen - in short, it makes your message almost unreadable.

To paraphrase Tom Clark, W3IWI - PLEASE!!! USE THE RETURN KEY !!!

LAN-LINK

Bill Fergusen KE7OM

[In a previous issue, I had detailed some of the features of Lan-Link, a new Packet Radio Terminal program by Joel Kasser G3ZCZ, and the problems I had getting it running. Bill read the article and contributed this article.- Ed.]

The fix for Lan-Link is really simple. The first 26 lines of the LAN-LINK.SYS file are data lines to initialize the program. The rest of the lines pertain to tnc parameters. All this is explained in section 19 in the .DOC manual. The first 26 lines are critical to getting the program to run. Whether you plan to use all of the features of Lan-Link or not, you must have entries for each of the first 26 lines. (Line 26 is and EOF marker). Of critical importance are:

Lines:

1. Your call
8. ComPort
9. TNC Type (TNC2, PK232, etc.)
10. Baud Rate (1200 default. MUST MATCH YOUR TNC. 4800 Recommended.)
19. TNC Data Bits (7 or 8)
20. TNC Parity
21. TNC Stop Bits
22. DCD Status Bit.

There are some differences in these settings depending on the TNC you use.

I had trouble getting Lan-Link to run at first. I discovered the problem was a missing line (line 4) in the .SYS file. This, of course threw everything else off in the file. Once that was found it booted and ran fine. This is an excellent terminal and multi-function program, one you will find quite useful if you browse the activity on the HF bands.

PLEASE RENEW!

Many NAPRA memberships expire in December. Please renew! NAPRA NEEDS YOUR SUPPORT!. Remember that your dues cover the cost of maintenance and improvement in the two key Seattle area nodes- SEA and SEAW, as well as their respective backbone nodes.

BIRTH OF A MAILBOX

Bob Donnell KD7NM

Historically, the Northwest Amateur Packet Radio Association has had an interest in supporting newcomers coming into Packet Radio. As a result of Novice Enhancement, NAPRA decided to help fund a beginner's LAN access, so that novices, the most common entry level amateurs, would have a place to do packet. The owners of the 224.56 repeater, already dedicated to packet, were interested in having their system joined onto the Northwest Packet Network, so the YouthNet (YTHNET) node was created.

To foster good operating practices, a high priority was for the new Local Area Network (LAN) have its own Packet Bulletin Board System (PBBS) or MailBox (the term that W0RLI uses to describe the PBBS software that he has written). As NAPRA's Technical Vice President, I had operated a personal PBBS to handle the considerable quantity of mail I was exchanging. The Xerox 820 based PBBS I was using had an additional port and I had an additional TNC. I volunteered the services of my system to support the YTHNET LAN. The main group of Novice packeteers has come from classes taught at Key Peninsula Junior High School by Budd Churchward WB7FHC. From the conversations I've had with kids in that class, there is usually a waiting line to get on the air at the school station. These youths regularly exchanged mail with other young people, particularly in Europe.

For the most part, the Xerox PBBS worked well, but as with all things packet, the state of the art in PBBS operations did not stand still. Several things occurred that outstripped the capabilities of the Xerox PBBS to provide a level of service comparable to that provided in other LANs. Hierarchical forwarding was needed because of the number of international messages that the Novices in Budd's class were generating. I was having to add calls to the forwarding file almost daily - and I'm sure the other sysops on the path of the messages were having to do the same. Also, the Xerox was running out of memory - both internal and disk storage capacity. 64K of RAM maximum was making it difficult for the programmers to add features and keep up with the improvements in PBBS technology. 241K of disk storage for messages wasn't big enough either. I was killing bulletins after only 5 days and there were several occasions when the disk overflowed, resulting in several hour sessions to repair the message file. Finding a hard disk controller was difficult. Then there would have been the project of adding the controller and hard disk to the system and making the PBBS use it.

The NAPRA board of directors discussed this problem at great length and decided that with NAPRA's ongoing support of new packeteers it was appropriate for NAPRA to fund an IBM PC type computer for use as a PBBS for Youthnet. Steve Stroh N8GNJ was commissioned to find the most computer for the lowest cash outlay. With Steve's efforts and additional donations of equipment from others, I was presented with current software and a PC clone computer with a hard disk on which to operate a PBBS. Now began the task of turning the computer into a working PBBS. Cables were needed to connect the serial ports of the computer to the outside world. I discovered that the motherboard in the computer was designed to work at two speeds - 4.77 MHz and 12 MHz. The memory installed in the computer would only allow it to run at the slower speed. A little looking at the motherboard revealed a two crystals, one for each of the two speeds. A little calculation and checking with those more knowledgeable said that with the memory installed in the computer that operation at 8 MHz should be possible. A crystal was acquired and installed. The system was reconstructed. I set the jumpers on the motherboard to start up at the higher speed. Now the moment of truth - would it work? I held my breath and threw the big switch. It worked! And it worked noticeably faster.

Now to get things talking. I dove into the PBBS documentation. Files were edited to configure the system. Needed directories were created. I got the computer and TNC to talk using one of the common communications programs. Now to start the PBBS. This proved to be the biggest challenge of the whole project. I started the "batch" file to bring the PBBS up. It loaded the serial port driver, and the file protection module correctly. Next came the initialization of the PBBS environment. It signed on - and the system locked up. OK - sometimes things like this happen. I re-booted the computer. It got to exactly the same spot. I was watching more carefully, but there was still nothing to notice. Back to the documentation. I assumed that I had not properly created the configuration files. I did find some problems there. I tried again. The system hung up again, at the same spot. Back to the manual. AH HA! Something I had missed - the PBBS required that the standard 8088 be replaced with a processor with more capabilities. I acquired the V-20 enhanced (and faster) microprocessor and installed it. Time to start the system up again. This time it worked!

Now to get it up on the air and see how it looked. I called Don, KA6QMT (now N7NKJ), and on May 6th at about 1:30 in the morning. He was the first person to try the new system, and the first to leave a message. Next I wanted to get all the mail and bulletins off the Xerox system and onto the PC. This is complicated by two factors. The first is that the Xerox uses 8" disks and the PC uses 5" disks. (Folding the 8" disks to fit just doesn't work.) The second has to do with the way messages are stored on the two systems. Connecting the systems together and using a communications program to transfer the files wouldn't work because the way messages are stored is completely different for the two systems. Fortunately a workable solution was available. At about 4 in the morning, on a quiet frequency, I told the Xerox to forward all its messages to the PC PBBS. In a sleepy daze I watched as messages started moving from one system to the other. After seeing about 10 messages transfer from one system to the other, I decided it was working well and went to bed. No surprises when I got up the next morning, either. The mail had taken about 3 hours to transfer. Then I turned all the help files into messages and let them move to the new system. That took another 4 hours

or so. Next I connected via radio and made a couple of quick connects. A few minor configuration problems were revealed, and I fixed those.

Since that time, several enhancements have been added to the system. Desqview multitasking software allows me to run several copies of the PBBS program at once, to support several users simultaneously (the full duplex nature of the Youthnet LAN makes this much more feasible than on a typical simplex LAN). The computer now runs the G8BPQ PC-Node software to allow more than one user to connectto the system from any one radio/TNC while allowing me to operate packet without tying up a PBBS session myself. With the G8BPQ software, the PBBS is in effect another Net/Rom node- it is seen in the nodes table of YTHNET (and SEAW, with which the YTHNET TNC shares the site) and can be easily connected to by connecting to YTHNET and then to BBS. Running the PC-Node software has also shown that it would be possible to replace a cluster of Net/Rom TNC's on a hilltop with a single PC type computer AND provide BBS service from the hilltop- eliminating 50% of the traffic (no more node-PBBS and PBBS-node traffic) on the user frequency. Of course, there are several details that render this idea not quite practical, but it is possible.

In the months of operation, the system has had over 5000 messages sent and received on it. Everything generally works well. It was a challenge putting up the new system, but one I enjoyed. I hope you enjoyed the telling of the experience.

NET CONTROLS NEEDED!

The Thursday Night Packet Radio Ragchew is an informal net and has been operating continuously for several years now. The net has proven to be a valuable resource to both novice and experienced packeteers. Although the net is informal, it is directed by a Net Control Station to allow as many stations as possible to get their questions and comments in, as well as allow other stations to pass non-ragchew traffic.

We need more net control volunteers! Contrary to popular belief, net controls aren't people with special skills- just ordinary packeteers trying to help out other packeteers. There aren't any minimum requirements, such as a General class license, or anything like that. The only requirement is wanting to help.

We try to have enough net controls so that each person only has to be net control once per month, with a couple of backup net controls in case of sickness, etc.

If you haven't listened to the Ragchew lately, give it a try. It's on Thursday nights at 9:00 P.M. Pacific. In the greater Seattle area, the net is carried on the Boeing Employees Amateur Radio Society's (BEARS) 145.33 MHz repeater.

To get more information about being a net control for the Thursday night Packet Radio Ragchew, please contact NAPRA Executive Vice-President John MacDuff KA7TTY at WS7M or 392-7693.

[Originally appeared as a Northwest General Bulletin- Ed.]

THE KANTRONICS DVR2-2

Scotty KF7QZ

Good day all. I just thought that I would take the time to tell you about a radio I have been using for the last month or so. It is a neat little radio and has several of the features that a lot of people have called for. It's the Kantronics DVR2-2 packet specific radio.

This little jewel is perfect for my packet operation and would also make a good mountaintop digi radio. The radio has 2 watts out and has two channels available for use. My understanding is that Kantronics is going to be making a ten channel board optional later. What makes it a good little rig is that if I had another DVR2-2 around to test it, this thing has a keyup time from push to talk activation to full power of 5 milliseconds. Most radios have a 100-300 millisecond keyup time. It also has a 10 millisecond carrier detect output. Combine these two features and you have a txd setting of 2 (20 milliseconds)- most people today are using 15-20. In fact, I have to set my txd to 15 just to get anyone to hear me.

I can't use it, but the DVR2-2 also has a discriminator output on the rear panel connector. [Also a direct connection to the modulator. -Ed.] It is designed to connect directly to a high speed modem if needed up to 9600 baud. Nice idea (gee I wonder if the XYL will let me go 9600?) If you own a Kantronics TNC, (I have the KAM) it is designed for a pin to pin compatibility with the DB9 connector on the TNC (the radio's TNC connector is a DB9 also). Kantronics has also added a microphone input if you want to put your rpt pair in to one of the channels.

Most of the people I have spoken to have wondered why only 2 channels. But only 6 months or so ago a lot of people that I talked to were in the search mode for a small 2 or 4 channel rig (IE the Heathkit HW202 which have rising in price at hamfests) just for packet and mountaintop use. Well, Kantronics has provided one. Oh well, nobody is always happy.

It came with 145.01 and I'm installing 145.03 right now. So I have the 2 most popular channels in the PNW. Just right. When contacting 'em on the availability of other channels I was told they stock .03, .05, .07, 145.61, 146.58, and rpt xtals for 34/94, 22/82 and 52 simplex.

This is truly a neat little rig for Packet only operation and if its what you always wanted for Christmas, tell your XYL that Santa has just the thing for you. I haven't seen anyone with this rig in stock around the Seattle area yet. [Amateur Radio Supply has recently advertised the DVR2-2. -Ed.] But call Kantronics and ask for Karl and tell him Scotty sent ya. If you have more questions, send me a message @ N7IIJ.WA or call Kantronics.

SWAPNET BBS ON THE AIR

Tom Gilchrist N7KHU

[My sincere apologies to Tom for not publishing this article in the last issue of Zero Retries- Tom got it to me in plenty of time and I simply did not include it in that issue. Sorry Tom. -Ed.]

A special purpose BBS for buying and selling HAM radio and related items is now in operation. The N7KHU SwapNet is located in Renton, WA and operates on 224.560. It can be accessed from the YTHNET node.

SwapNet uses a menu driven system which allows users to enter items *for sale or wanted, search the database for items of interest, or read listings. You can also delete your listings.

When you log onto the SwapNet for the first time, the system asks you for your name and home BBS. (NOTE: At this time, this information can't be changed by the user. If you change your home BBS (or your name) just send mail to N7KHU @ W0LVJ and I'll change it.) As the system is now written, the home BBS is only for the Sysop's use. I plan to add it to the ads later.

The main menu lets you add, list, search, and delete items. It also has a menu item for HELP and BULLETINS. HELP gives you a general overview of the system, the rules of the board and stuff like that. The BULLETIN menu item lists the current schedule for the board, local items and events of interest, new features, etc. There is also a short message of the day (MOTD) which is listed when you first log in.

If you want to add an item to the system, you are asked your phone number (with area code), if the item is for "SALE" or "WANT", and the category it is to be listed in. There are now seven categories:

1) HF Rig
2) HF Antenna
3) VHF/UHF Rig
4) VHF/UHF Antenna
5) Packet/RTTY/Digital
6) Computer
7) Misc/Parts

You then are asked for the name or type of item you wish to list.

This entry can be up to 40 characters long. Then you are asked to enter a description line. This line is up to 79 characters long and can be used to give a description, the condition, information, and the price. Yes, prices are allowed on this board.

Below is a sample of how a listing would appear when reading an ad:

> Item #22 Call: N7XYZ Phone: 206-555-1212 Date 7/2/89
> For Sale Category: HF Rig - Kenwood TS440AT w/Mic
> Mint condition, very few hours, 10m factory mods. $1200 obo evenings.

The "Kenwood TS440AT w/Mic" was entered as the name of the item. The last line was the one line description. The ads are automatically formatted and numbered by the computer. If you sell or buy items you have listed, please check back and delete those items. I purge items over 30 days old.

The last item on the main menu is to disconnect from SwapNet. The software writes the date and time of the last time you used the board. If you disconnect prematurely, this information is not written to disk. This time stamp is used to determine if there are any new listings for you to read when you log into SwapNet the next time. Try to use this menu item (8) when you are done.

That's about all there is to say about using SwapNet. I do reserve the right to delete any items I don't think are appropriate. The FCC rules don't allow commercial ads of any kind. The new rules also state that someone who consistently buys and sells equipment to make a profit is a commercial user whether he has a "store front" or not.

The software being used is by N6TY, John Beaston, in Portland OR. The system runs under MS/DOS and is written in Turbo Pascal. There are now four of these systems up in this part of the country. I do not yet exchange ads with these other systems...some software changes need to be made...perhaps later. Anyway, check-in and enjoy.

THE DSP-232 AND OTHER THOUGHTS ON DSP

Steve Stroh N8GNJ

Apparently Advanced Electronic Applications (AEA) in Lynwood, WA is about to pull off a coup in the world of commercial Amateur Radio equipment. It will be the first to produce an off-the-shelf piece of equipment utilizing state of the art Digital Signal Processing (DSP) technology. It will be released either late this year or early next year- rumors vary (see below).

The first public mention that I saw about the DSP-232 is from the usenet newsgroup rec.ham-radio.packet, Message-ID: <501@idacrd.UUCP>. Bob McGwier writes (in reply to a message thread that asks the question Is the U.S. becoming a nation of appliance operators): [excerpted] I would say no. At the same time I am doing this, I have developed AEA's follow on to the PK-232, called the DSP-232 (released early next year) and I had a lot to say about the Microsat that will be launched in January. I wrote a satellite tracking program that consistently has been AMSAT's number one fund raiser.

The second public mention about the DSP-232 was in the latest issue of the AMRAD newsletter (AMRAD is a R&D group of amateurs in the Washington, D.C. / McLean Virginia area whose particular interests are DSP, Spread Spectrum, and telecommunications for the hearing impaired). In the November 1989 Issue, Presentations at the September 1989 AMRAD Meeting, Dick Barth W3HWN writes: [excerpted] "Dave Borden (K8MMO) has been busy of late preaching the DSP gospel at neighboring radio clubs. He's spoken to the Columbia (MD) radio club, the Baltimore Amateur Radio Club and whoever else will listen. The use of DSP is expected to increase markedly in the next few years

with the first commercial amateur-oriented DSP box expected to be released late this year. This is the DSP-232 by AEA, intended to be the first unit able to copy AMSAT's microsats. It uses the [Motorola] 56000 DSP chip as a modem and according to rumor uses Z80-like processors for other work, permitting reuse of some earlier packet code and hardware design."

The incredible things that are possible with DSP are a result of the massive processing "horsepower" that a state of the art DSP chip has. Using the same radio, and by simply changing the software running on the DSP chip, you can decode RTTY, FAX, 300 baud packet, 1200 baud packet, 2400 baud packet, AMTOR, SSTV, or WHATEVER! The key phrase is that it's software- IT'S ONLY SOFTWARE! The days of incredibly tricky modem design (in hardware) are certainly numbered.

It should be noted that the development of DSP technology for Amateur Radio use is not new- both AMRAD and a joint project between TAPR and AMSAT have been developing DSP technology for several years now. TAPR and AMSAT's DSP efforts were put aside when the Microsat launch opportunity became available and the personnel working on TAPR's DSP project switched their efforts to the crash course development on the Microsats. Now that the Microsats are complete (software development continues, but the Microsats themselves are waiting at the launch pad at this writing- software will be uploaded after they achieve orbit), the DSP team can continue their efforts.

Not coincidentally, the DSP and Microsat efforts are complementary. DSP technology is quite capable of decoding the 1200 and 4800 baud PSK downlink from the Microsats as well as generating the 1200 baud AFSK FM uplink signal. Indeed- as mentioned in the AMRAD Newsletter excerpted previously, communicating with the Microsats will one of the first uses of Amateur Radio DSP technology. Once DSP capabilities are understood and appropriate software made available, the viability of several specialized RF modems is in question.

The first hardware modem that DSP may rapidly render obsolete is the TAPR PSK modem kit and its commercial counterpart, the Pac-Comm PSK modem. These modems were originally designed for use with the Fuji-Oscar 12 satellite. The Microsats will use the same type of PSK downlink that the Fuji satellite did.

The second will be the 9600 baud RF modems just now starting to appear, such as the Pac-Comm/G3RUH 9600 baud modem and the TAPR PacketRadio (which will be beta testing soon). I must admit that this one startled me a bit, but apparently it is quite easily accomplished.

The third will be specialized modems for HF use, such as those made by AEA, MFJ, and HAL. DSP is able to recover incredibly weak signals (moonbounce has been worked successfully with ordinary radios using DSP techniques) as well as filter out repetitive extraneous noise, such as "woodpeckers". With the use of a protocol that can make effective use of DSP's abilities, HF digital communications should become much more effective.

Date: 10 Jan 90 21:14

NEWSFLASH!
PACSAT LAUNCH DELAYED

At press time, word was starting to trickle in that the launch of the Ariane rocket on which the Microsats are riding would be delayed until late January, at the earliest. The cause was apparently a malfunctioning tape recorder associated with the main payload. PACKETEERS WILL BE ABLE TO MONITOR A MICROSAT USING ORDINARY 2M FM AND STOCK TNC'S.

In the January 8, 1990 issue of the KD2BD SpaceNews, mention was made of the various downlink frequencies for the Microsats. Most were of academic interest to the average packeteer, because a 440 SSB radio coupled to TNC equipped with a PSK modem is required to receive the downlink. As most anyone who has been following the progress of the Microsats is aware, the DOVE (Digital Orbiting Voice Encoder) satellite, sponsored by AMSAT Brazil, is a bit different- its output is in the 2 meter band, using FM. What came as a surprise to me, and I'm sure many others, was that DOVE will use ordinary AFSK on its downlink shortly after launch. (I was under the mistaken impression that DOVE's downlink would be used almost exclusively for the voice mode.)

This means that all you have to do to receive DOVE will be to tune your 2m packet system to 145.825 and listen- the explanation of how to decode the telemetry will probably be released soon.

From: Andy Freeborn N0CCZ <ucsd.edu!winfree!andy>
Subject: TAPR Annual Meeting

ANNUAL TAPR MEETING - TUCSON AZ
SATURDAY AND SUNDAY
FEBRUARY 24th - 25th

The TAPR annual meeting will be held at the Inn At The Airport, 7060 South Tucson Boulevard, Tucson AZ, 85706. The Inn is a very short distance from the airport terminal, walking distance if you're so inclined. Special rates for the meeting are $49.00 for either one or two in a room. Breakfast is included as well as a late afternoon cocktail hour. Our room block will be released on February 9, 1990 so get your reservations in prior to that date. Call 1-800-772-3847 if outside Arizona, 602 746-0271 if in Arizona, or write the above address. Cite The TAPR Conference to assure rates

There will be a registration fee of $20.00. This fee will help to defray meeting costs plus lunch and private dinner at the hotel. Since breakfast and cocktail hour are provided to those staying at the hotel the overall cost is quite nominal. The Sunday session should be completed by noon or shortly thereafter for those planning return travel on Sunday afternoon.

Networking, that's the packet radio buzzword for the early '90s. And that will be one of the main topics at the 1990 TAPR annual meeting. Equally exciting will be discussions by members o the Microsat team describing and graphically displaying the construction, pre/launch and launch activity of the Microsats and their UoSAT cousins.

Expect to see many of the manufacturers of packet equipment present with displays and demos. Some have already contacted TAPR for arrangements. All the new TAPR kits will be shown and discussed.

Those wishing to be on the speaking agenda should advise the TAPR office as soon as possible. The Sunday session should be concluded near or shortly after noontime for those planning afternoon departures.

NAPRA, the Northwest Amateur Packet Radio Association is an organization of Amateur radio operators dedicated to the growth of the Amateur Packet Radio network in the Pacific Northwest. Membership is open to all interested individuals- an amateur radio license is not required for membership. NAPRA's yearly dues are $15.00 and include a subscription to NAPRA's quarterly newsletter Zero Retries.

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The address for editorial contributions to Zero Retries is Steve Stroh N8GNJ, Editor, 14919 NE 163rd Street, Woodinville, WA 98072-8957, 206/481-5735, N8GNJ @ KD7NM

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